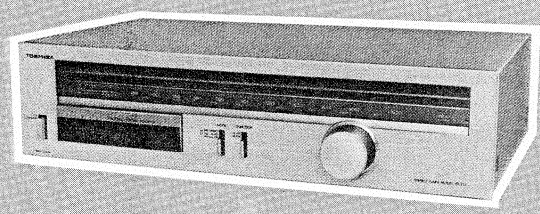
TOSHIBA

STEREO TUNER

ST-T25



SPECIFICATIONS

■ FM Tuner Section

Receiving frequency:	87.5 ∿ 108 MHz
Sensitivity (DIN):	1.7 μV
Harmonic distortion:	MONO 0.2%
	STEREO 0.4%
S/N (IHF A Network):	MONO 72 dB
40K dev.	STEREO 65 dB
Frequency response:	30 Hz ∿ 15 kHz + 1 dB
	−2 dB
Selectivity:	60 dB (±300 kHz)
Image rejection:	50 dB
Capture ratio:	2.0 dB
Spurious response:	70 dB
AM suppression:	50 dB
Stereo separation:	40 dB (1 kHz)

■ AM Tuner Section

Receiving frequency:	525 ∿1605 kHz
Sensitivity (S/N 20 dB):	300μV/m
Selectivity:	25 dB
Image rejection:	40 dB
S/N:	50 dB

■ General

Power supply:	220V 50 Hz for Europe
	240V 50 Hz for Australia
Power consumption:	9W
Weight:	3.3 kg
Dimensions:	420(W) x 109(H) x 286(D)mm

Specifications are subject to change without notice.

TE, AY

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1. OPERATING CONTROLS

FRONT VIEW

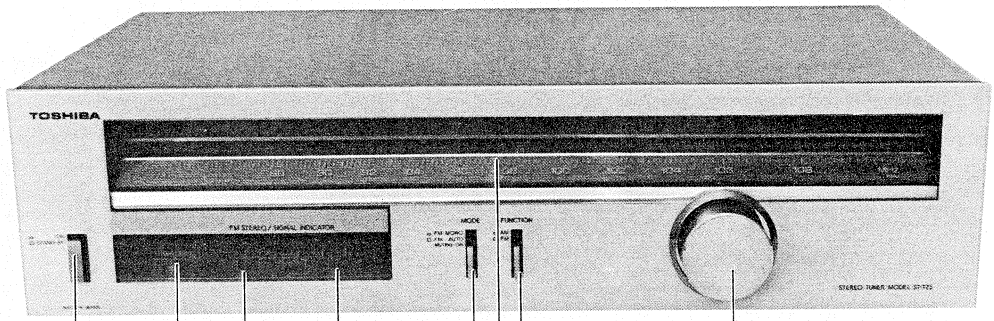


Figure 1

(1) Tuning Knob

(2) **Radio Band Selector Buttons**
Choose the programme source by pressing one of these buttons:
For FM radio broadcasts
For AM radio broadcasts

(3) **Tuning Pointer**

(4) **Mode Switch**
In the FM AUTO/MUTING ON position, the muting circuitry suppresses inter-station noise, and either FM stereo or mono reception is possible. In the FM MONO position, muting does not function and FM stereo broadcasts are produced in monaural form. Use this position to receive weak stations that the muting circuitry might suppress.

(5) **Signal Level Indicator**
These LEDs light up to indicate the strength of the signal being received. The stronger the signal, the more LEDs light up.

(6) **FM Stereo Indicator**
Lights up when an FM stereo broadcast is being received.

(7) **Function Switch**
Depress this switch to turn on power, depress once more to turn equipment to standby mode.

Note:
Standby Mode: Equipment remains connected to mains Supply; disconnect when not in use.

2. SYSTEM CONNECTIONS

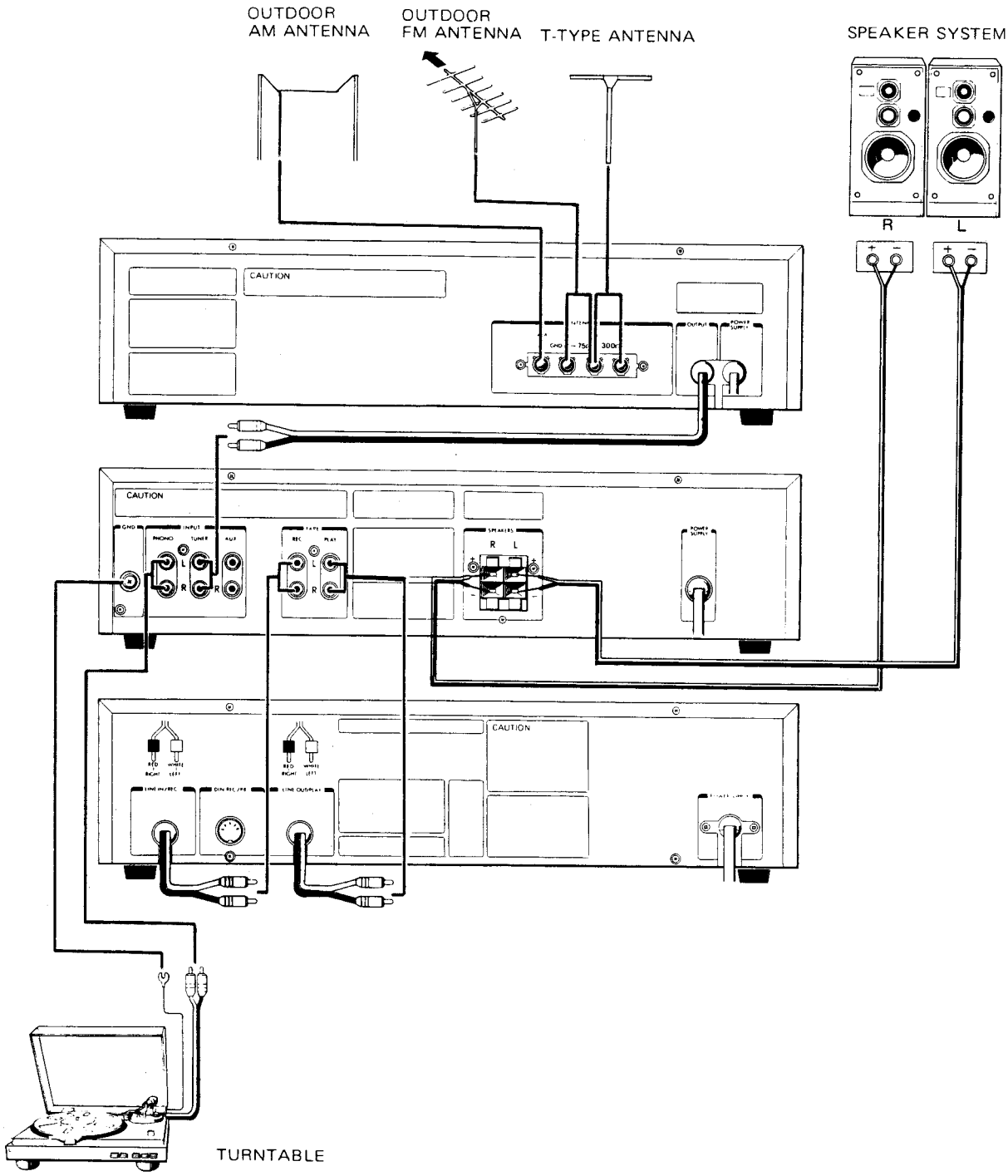


Figure 2

3. CONNECTIONS

(1) If you use a 300 ohm FM aerial, connect it to the 300 ohm terminals. Use the 75 ohm terminals if you use a 75 ohm aerial.
(2) When the desired AM station is distant and the signal is too weak, connect an external AM aerial to AM aerial terminal. Reception may be improved.
(3) Connect the output terminals to the tuner input terminals of your amplifier, making sure that the L and R cables are not reversed.
(4) If your FM aerial is relatively distant from the tuner and a long connection cable is required, use 75-ohm coaxial cable. Reception may be improved and noise will be greatly reduced.

4. TUNER OPERATION

(1) Depress the desired radio selector button (2).
(2) Tune to the desired radio station with the Tuning knob (5). AM optimum reception conditions will be shown by maximum lighting of the Signal indicator.
The FM Stereo Indicator will light for any FM stations broadcasting stereo programs.
When the station frequency is reached, the tuning pointer (3) will turn from a orange colour to green.

Note
For FM: If the desired FM station is too far away for effective stereo reception, press the FM MODE Switch in to the FM MONO position.
For AM: In areas of good signal strength it is sufficient to use. However, in areas of poor signal strength it is necessary to set up an outdoor antenna.

5. DISASSEMBLY INSTRUCTIONS

TOP COVER REMOVAL

1. Remove four screws (A) (3ϕ x 6mm) from each side of the top cover as shown in Figure 3.
2. Remove two screws (B) (3ϕ x 6mm) from back side of the top cover.
Then, the top cover can be removed from the unit as shown in Figure 3.

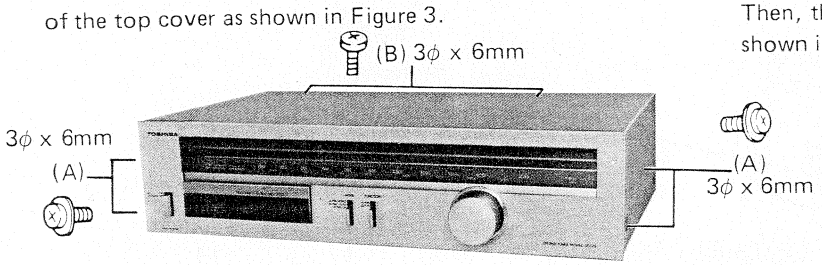


Figure 3

PANEL REMOVAL

1. Remove four screws (C) (3ϕ x 10mm) from the bottom plate as shown in Figure 4.
2. Remove one knob (D) from the front panel as shown in Figure 5.
3. Remove the hexagon nut (E) holding the ring under the tuning knob as shown in Figure 6.

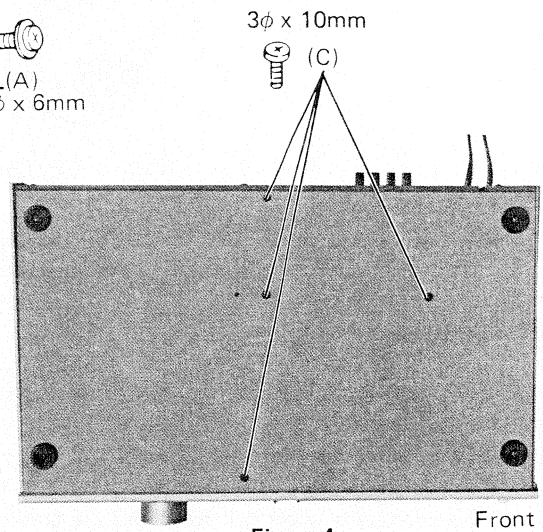


Figure 4

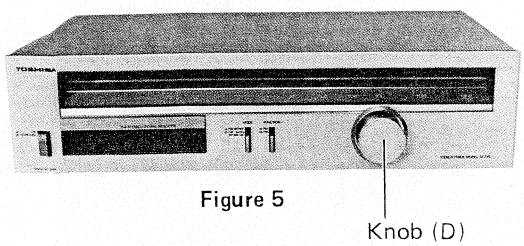


Figure 5

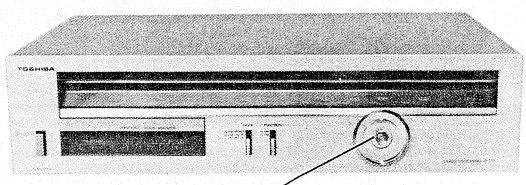


Figure 6

4. Remove four screws (F) (3ϕ x 8mm) of the side panel plate holding side plate as shown in Figure 7 and 8.
5. Remove the P.C. Board and the others installed in the panel. Then, the panel can be removed from the unit.

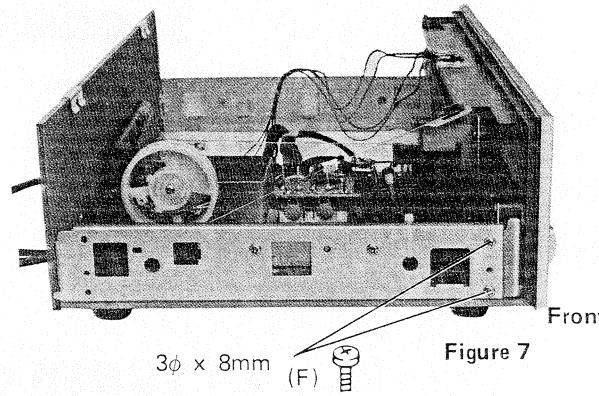


Figure 7

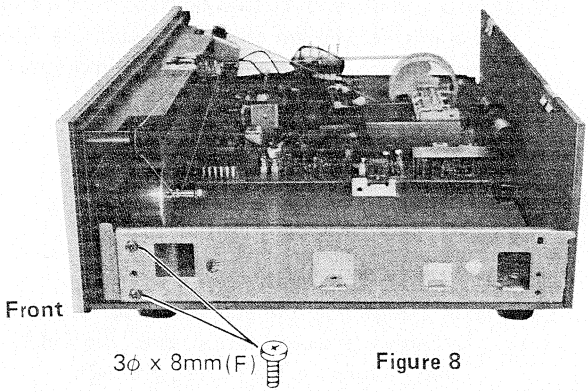
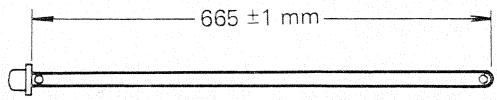


Figure 8

6. DIAL CORD



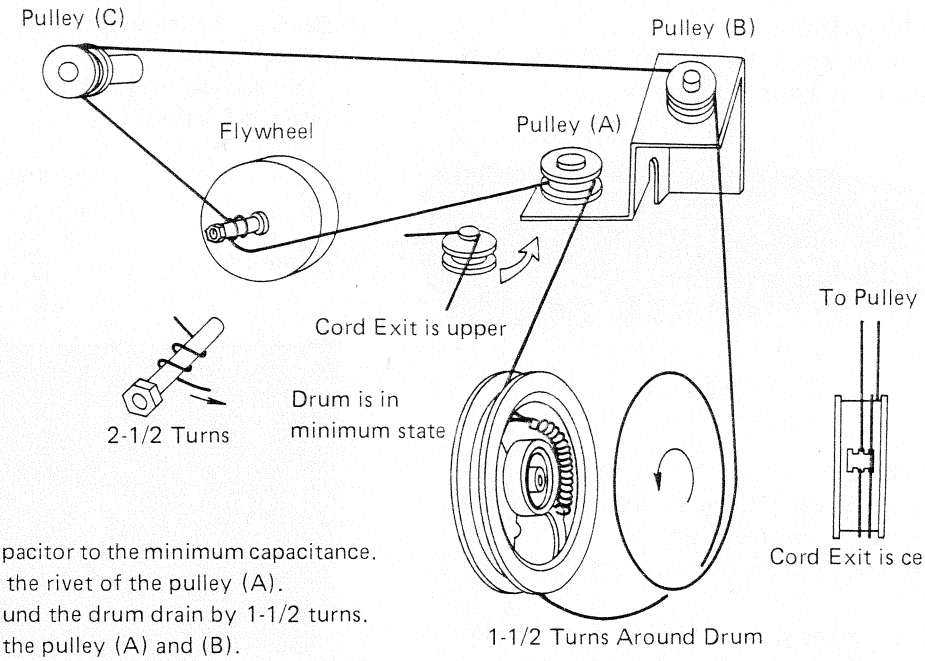
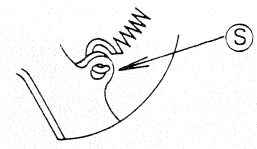


Figure 9

Dial Cord Stringing

1. Set the variable capacitor to the minimum capacitance.
2. Hook the cord on the rivet of the pulley (A).
3. Wind the cord around the drum drain by 1-1/2 turns.
4. Wind the cord on the pulley (A) and (B).
5. Hold the cord by a finger not to loosen the cord between the pulley (C) and the flywheel.
6. Wind the cord on the pulley (A) regularly.
7. Rotating the flywheel to the maximum frequency direction wind the cord on the flywheel shaft by 2-1/2 turns.
8. Apply a lock paint (Semedyne) on the Ⓢ position hooking the drum spring.



7. ADJUSTMENT INSTRUCTIONS

AM ADJUSTMENT

Test equipments/Tools required

1. Signal generator
2. Sweep generator
3. Test loop antenna
4. VTVM
5. Adjusting screwdriver
6. Adjusting screwdriver (Use to antenna core)
7. Oscilloscope

IF ADJUSTMENT

Step	Adjustment	Remarks
IF Response	T133	Adjust for scope pattern with specified marker (460 KHz) as illustrated in Figure 10 .

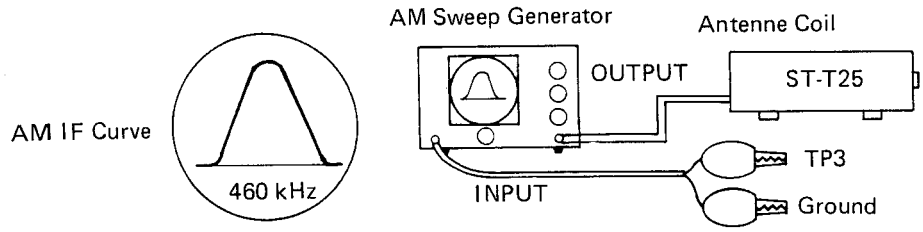


Figure 10

FREQUENCY COVERAGE AND TRACKING ADJUSTMENT

Step	Adjusting Circuit	Connection		SG Frequency	Position of Tuning Dial	Adjustment	VTVM
		Input	Output				
1	OSC (Frequency Coverage)	Connect signal generator to test loop	Connect VTVM to output terminal.	540 kHz (400 Hz 30% MOD.)	Tune to 540 kHz signal	**T132 (RED) AM OSC**	Maximum
2				1600 kHz (400 Hz 30% MOD.)	Tune to 1600 kHz signal	**C8 AM OSC Trim.**	
3	Repeat steps 1 and 2.						
4	ANT (Tracking)	Connect signal generator to test loop.	Connect VTVM to output terminal.	600 kHz (400 Hz 30% MOD.)	Tune to 600 kHz signal	**T131 Ferrite Ant. Coil**	Maximum
5				1400 kHz (400 Hz 30% MOD.)	Tune to 1400 kHz	**C10 AM ANT Trim.**	
6	Repeat steps 4 and 5.						

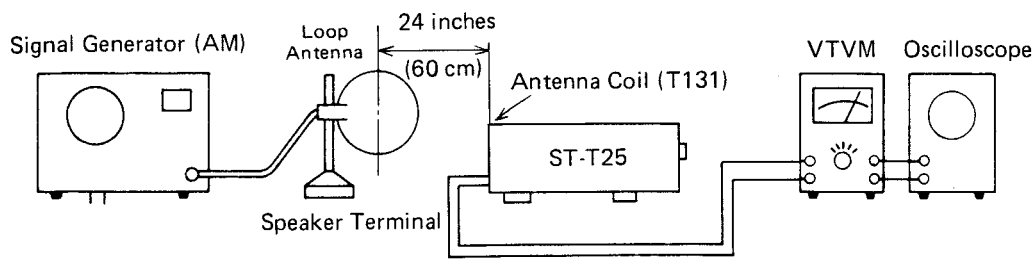


Figure 11

FM ADJUSTMENT

Test equipments/Tools required

1. Distortion meter
2. Signal generator
3. Oscilloscope
4. VTVM
5. FM dummy antenna (300 ohms)
6. Dummy load resistor
7. Network
8. Adjusting screwdriver
9. Adjusting bar
10. Tuning meter

Step	Adjusting Circuit	Connection		SG Frequency	Position of Tuning Dial	Adjustment	VTVM
		Input	Output				
1	IF distortion Adjustment (MONO)		Connect Tuning Meter to TP-1 (TUN)		No signal	**T101 (BLK Color)**	Adjust tuning meter pointer so as to keep center.
2	OSC Frequency coverage)	Connect FM signal generator to FM antenna terminal.	Connect VTVM to output terminal	87.5 MHz	Tune to 87.5 MHz signal	**T003 FM OSC Coil**	Maximum
3				108.0 MHz	Tune to 108.0 MHz signal	**C6 FM OSC Trim.**	
Repeat steps 1, 2 and 3.							
4	RF (Tracking)	Connect FM signal generator to FM antenna terminal	Connect VTVM to output terminal	88.0 MHz	Tune to 88 MHz signal	**T001 T002**	Maximum
5				108.0 MHz	Tune to 108 MHz signal	**C2 C4**	
Repeat steps 4 and 5.							
6	IF Distortion Adjustment (MONO)	Connect FM signal generator to FM antenna terminal. Connect the modulator to signal generator	Connect VTVM, oscilloscope and distortion meter to output terminal. Connect Tuning Meter to TP-1 (TUN)	98.0 MHz	Tune to 98 MHz signal	**T101 (BLU Color)**	Distortion Minimum ≦0.2%
7	IF Distortion Adjustment (MONO)					**T101 (BLK Color)**	Adjust tuning meter pointer so as to keep center.
Repeat steps 6 and 7.							
8	Meter Deflection Adjustment	Connect FM Signal generator to FM antenna Terminal		1 kHz 60 dB	Tune to 1 kHz Signal	**R118**	Adjust for 5 LEDs to light.
9	Muting Sensitivity	Connect FM Signal generator to FM antenna Terminal	Connect VTVM to output terminal	1 kHz 60 dB	Tune to 1 kHz Signal	**R117**	Adjust for 20 dB

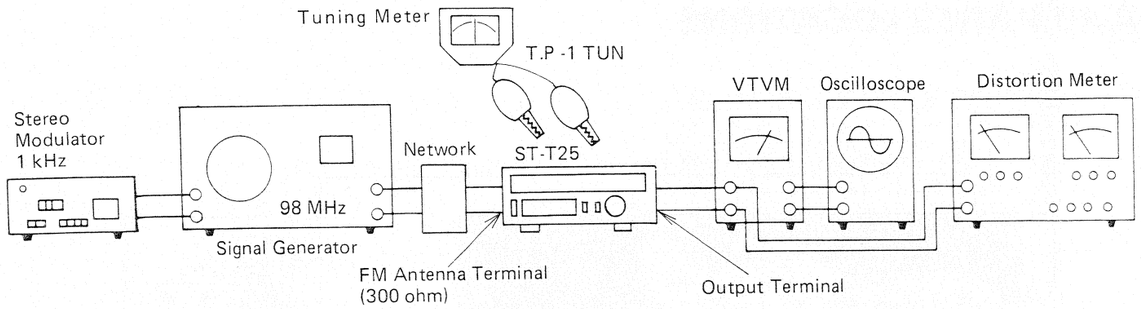


Figure 12

FM MPX ADJUSTMENT

Pilot signal adjustment	Connect a Signal Generator (with Frequency Counter) to the TP-2 (with 100K ohm load) and adjust the Semifixed Resistor R217 for 76.00 kHz reading counter with 1 kHz MONO signal input (FM MUTING SW. . . ON Position)
Separation adjustment	Receive the stereo signal and adjust the R206 for maximum channel separation. Note: Signal frequency: 98 MHz (60 dB) Frequency deviation: Pilot Signal 6 kHz L and R signals: 39.75 kHz

VTVM

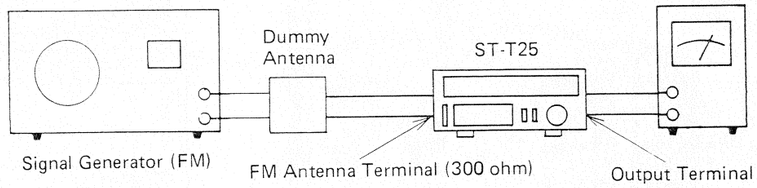


Figure 13

CAUTION: When realigning the FM Receiving Frequency, the lower side of the frequency range must not be below 87.5 MHz in order to comply with FTZ regulations in West Germany.

8. ADJUSTING PARTS LOCATION

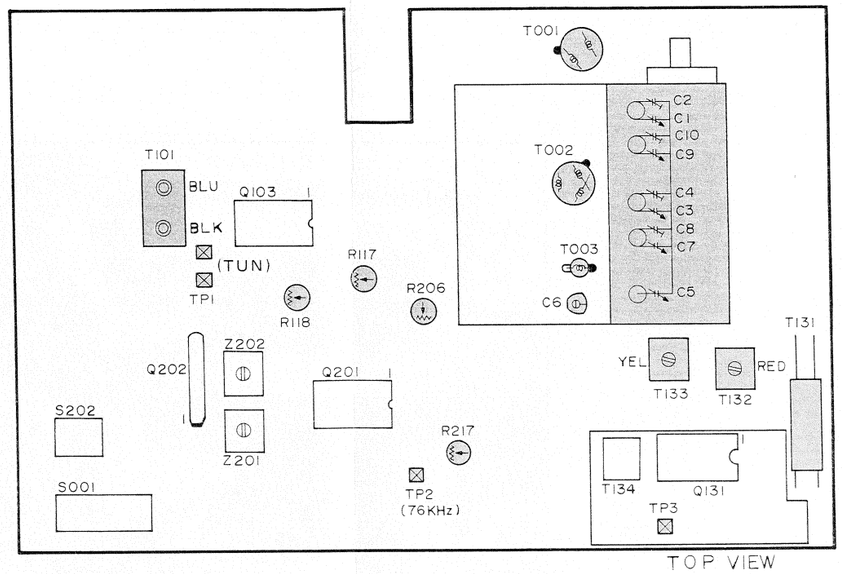


Figure 14

9. BLOCK DIAGRAM

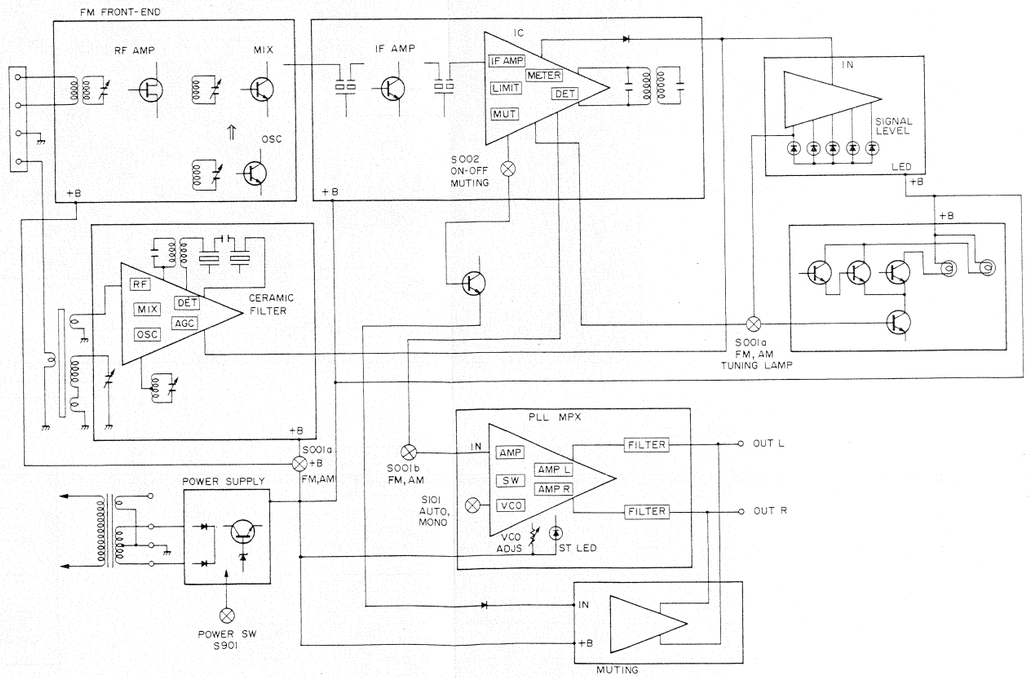


Figure 15

10. P.C. BOARD PARTS LOCATIONS

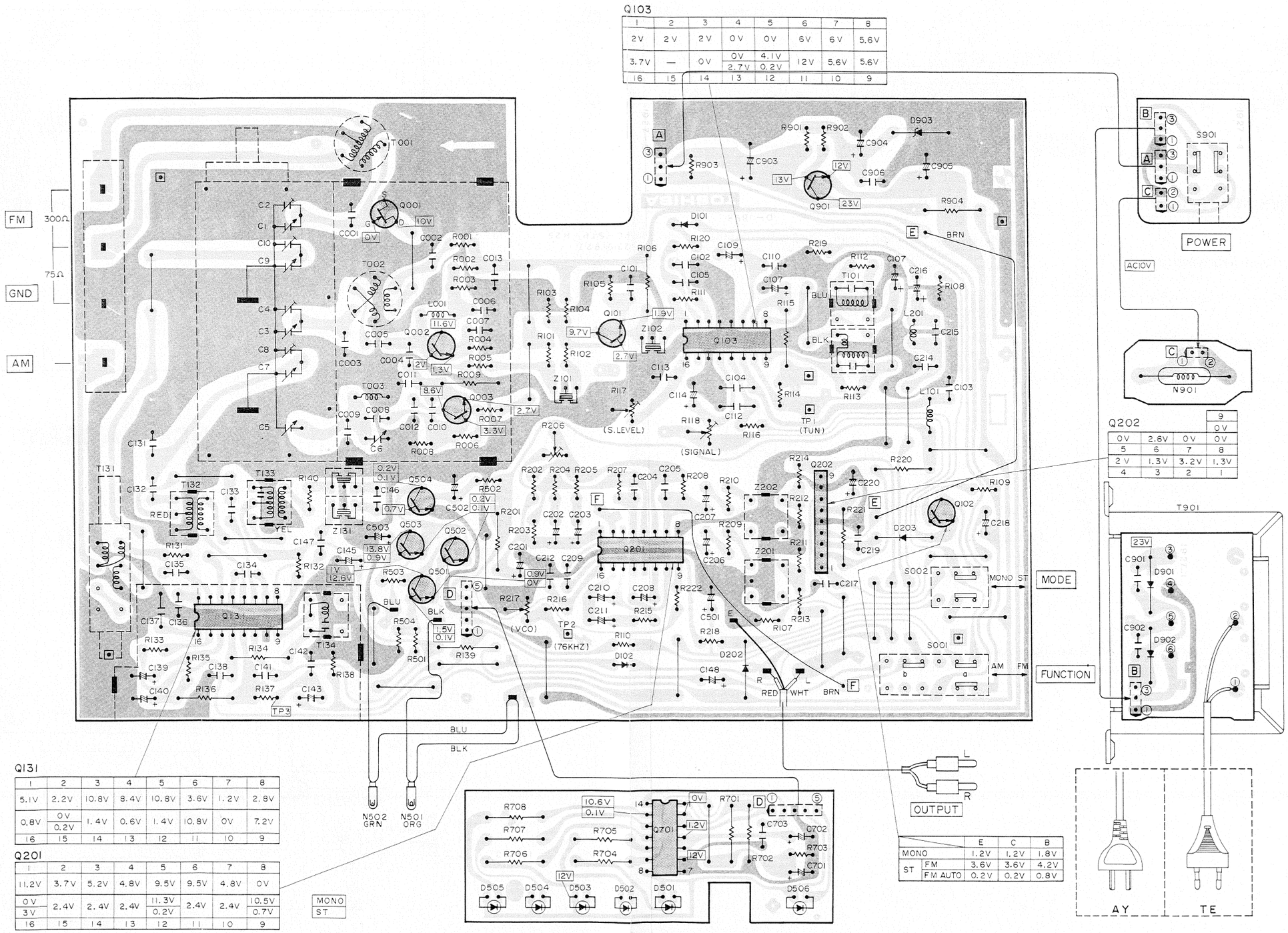


Figure 16

ST-T25	ST-T25

11. SCHEMATIC DIAGRAM

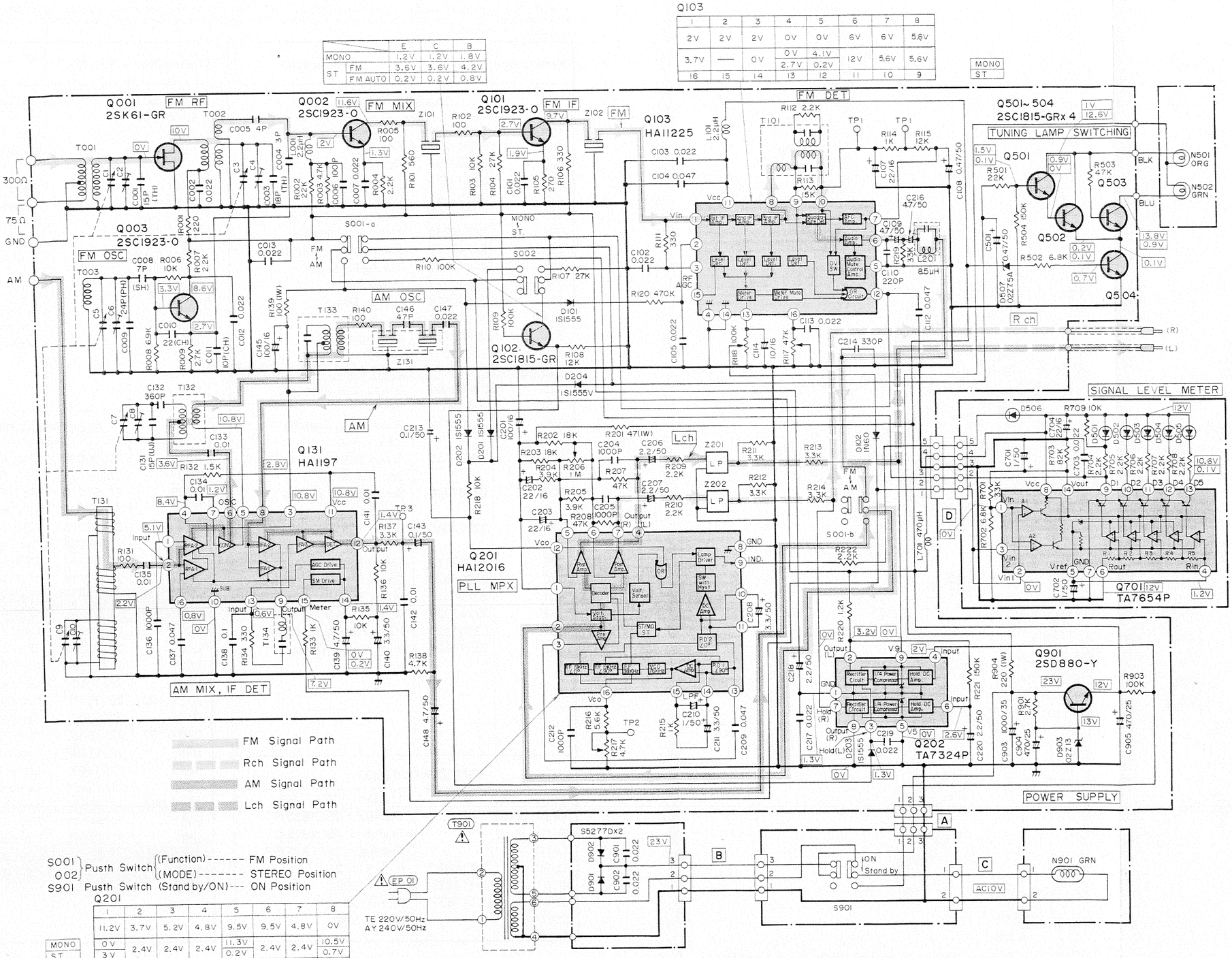


Figure 17 **CAUTION:**
The ⚠ mark, the symbol No. circlued with rectangle in the schematic diagram and the shaded area in the parts list designate components which have special characteristics important for safety and should be replaced only with types identical to those in the original circuit or specified in the parts list.

12. CABINET PARTS LOCATIONS

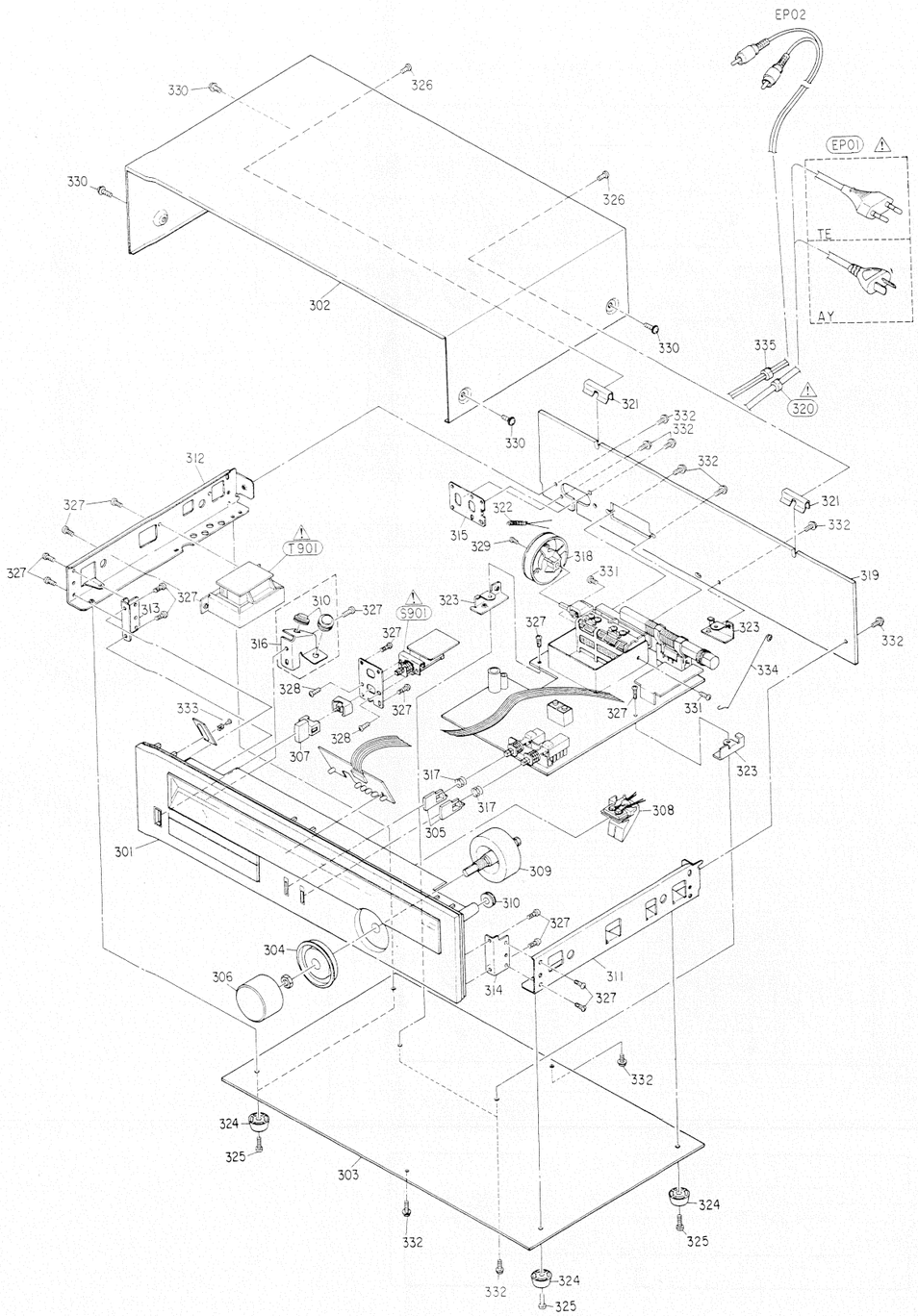


Figure 18

Note: The parts without Key No. on this exploded parts list are unserviceable parts.

13. PARTS LIST

CAUTION:
The ⚠ mark, the symbol No. circled with rectangle in the schematic diagram and the shaded area in the parts list designate components which have special characteristics important for safety and should be replaced only with types identical to those in the original circuit or specified in the parts list.

Symbol No.	Part No.	Description
		CABINET PARTS
301	22825016	Panel Ass'y
302	22841234	Cover
303	22852263	Board, Bottom
304	22833473	Ring, Volume
305	25837441	Knob, Push
306	22824358	Knob, Ass'y Tuning
307	22824350	Knob Ass'y, Power
308	22749269	Pointer Ass'y, with Lamp
309	22749267	Tuning Shaft Ass'y
310	22742217	Pulley Ass'y
317	25772529	Spring, Select
318	22742149	Drum, L240
319	22852259	Jack Board (TE)
319	22852267	Jack Board (AY)
⚠ 320	25845528	Bush, Nylon (Power)
322	20866009	Spring, Dial Cord
324	22874033	Foot
325	22707118	Screw, BID, Tapping, 3ϕ x 12mm
326	22707165	Screw, BID, Tapping, 3ϕ x 10mm
327	22701326	Screw, BID, Tapping, 3ϕ x 8mm
328	22707066	Screw, BID, 3ϕ x 6mm
329	22707473	Screw, BID, 2.6ϕ x 6mm
330	22707522	Screw, FL DT, 3ϕ x 6mm
331	22701313	Screw, BID, 3ϕ x 4mm
332	22707380	Screw, T PAN, 3ϕ x 10mm
333	22705030	Rivet, Plastic, 3ϕ x 8mm
335	25845120	Bush, Nylon (Output)
		SEMI CONDUCTORS
Q001		Transistor, 2SK61-GR
Q002, 003		Transistor, 2SC1923-O
Q101		Transistor, 2SC1923-O
Q102		Transistor, 2SC1815-GR
Q103	22114689	IC, HA11225
Q131	22114587	IC, HA1197
Q201	22114837	IC, HA12016
Q202		IC, TA7324P

Symbol No.	Part No.	Description
Q501, 502		Transistor, 2SC1815-GR
Q503, 504		
Q701		IC, TA7654P
Q901		Transistor, 2SD880-Y
D101		Diode, 1S1555V
D102	22115602	Diode, 1N60
D201, 202		Diode, 1S1555V
D203, 204		
D501, 502		Diode, TLR114A
D503, 504		
D505, 506		
D507		Diode, 02Z7.5A
D901, 902		Diode, S5277D
D903		Diode, 02Z13A
		ELECTRICAL PARTS
T001	22292078	Coil, FM Antenna
T002	22294422	Coil, FM RF
T003	22295116	Coil, FM OSC
T101	22267383	IF Transformer, FM Detect
T131	22242815	Coil, AM Antenna
T132	22245288	Coil, AM OSC
T133	22264757	IF Transformer
T134	22264744	IF Transformer
⚠ T901	22223950	Transformer, Power (TE)
⚠ T901	22223949	Transformer, Power (AY)
L001	22291082	Coil, 2.2 μH
L101	22291082	Coil, 2.2 μH
L201	22232250	Coil, Trap
L701	22230106	Coil, 470 μH
Z101, 102	22153140	Ceramic Filter, 10.7MHz
Z131	22153082	Ceramic Filter, 460 kHz
Z201, 202	22135032	Filter, Low Pass
N501	22113498	Lamp, Pointer (ORG)
N502	22113499	Lamp, Pointer (GRN)
N901	22113494	Lamp, Scale light (GRN)
S001, 002	22195639	Switch, Push
S901	22195641	Switch, Stund By
J001	22162468	Terminal 4P
⚠ EP01	22176286	Cord, Power (TE)
⚠ EP01	22176588	Cord, Power (AY)
EP02	22170352	Cord, USPIN

Symbol No.	Part No.	Description
	CAPACITORS	
	D = ±0.5%, J = ±5%, K = ±10%, M = ±20%, Z = −20 + 80%	
	ABBREVIATIONS: CD = Ceramic disk, EL = Electrolytic	
	MY = Mylar Film, PP = Polypropylene	
C1, 3, 5, 7	22307363	Variable Capacitor, VC-5-326
9, 2, 4, 8		
10		
C6	22309180	7P, Ceramic Trimmer
C001	22360158	CD, 15pF, 50V, J, TH
C002	22342223	CD, 0.022mfd, 50V, Z
C003	22360159	CD, 18pF, 50V, J, TH
C004	22361309	CD, 3pF, 50V, D
C005	22361409	CD, 4pF, 50V, D
C006	22362101	CD, 100pF, 50V, K
C007	22342223	CD, 0.022mfd, 50V, Z
C008	22360593	CD, 7pF, 50V, D, SH
C009	22360142	CD, 27pF, 50V, J, RH
C010	22360134	CD, 22pF, 50V, J, CH
C011	22360310	CD, 10pF, 50V, D, CH
C012	22342223	CD, 0.022mfd, 50V, Z
C013	22342223	CD, 0.022mfd, 50V, Z
C101	22342223	CD, 0.022mfd, 50V, Z
C102	22342223	CD, 0.022mfd, 50V, Z
C103	22342223	CD, 0.022mfd, 50V, Z
C104	22342473	CD, 0.047mfd, 50V, Z
C105	22342223	CD, 0.022mfd, 50V, Z
C107	22485220	EL, 22mfd, 16V, M
C108	22488478	EL, 0.47mfd, 50V, M
C109	22488479	EL, 4.7mfd, 50V, M
C110	22362221	CD, 220pF, 50V, K
C112	22342473	CD, 0.047mfd, 50V, Z
C113	22342223	CD, 0.022mfd, 50V, Z
C114	22485100	CD, 10mfd, 16V, M
C131	22360177	CD, 15pF, 50V, J, UJ
C132	22321050	PP, 360pF, 50V, J
C133	22342103	CD, 0.01mfd, 50V, Z
C134	22342103	CD, 0.01mfd, 50V, Z
C135	22342103	CD, 0.01mfd, 50V, Z
C136	22342102	CD, 1000pF, 50V, M
C137	22360484	CD, 0.047mfd, 50V, Z
C138	22343102	CD, 1000pF, 50V, M
C139	22488479	EL, 4.7mfd, 50V, M
C140	22488339	EL, 3.3mfd, 50V, M
C141	22342103	CD, 0.01mfd, 50V, Z
C142	22342103	CD, 0.01mfd, 50V, Z
C143	22488108	EL, 0.1mfd, 50V, M
C145	22485101	EL, 100mfd, 16V, M
C146	22362470	CD, 47pF, 50V, K
C147	22342223	CD, 0.022mfd, 50V, Z
C148	22488479	EL, 4.7mfd, 50V, M

Symbol No.	Part No.	Description
C201	22485101	EL, 100mfd, 16V, M
C202, 203	22485220	EL, 22mfd, 16V, M
C204, 205	22371102	MY, 1000pF, 50V, J
C206, 207	22488229	EL, 2.2mfd, 50V, M
C208	22488339	EL, 3.3mfd, 50V, M
C209	22372473	MY, 0.047mfd, 50V, K
C210	22488109	EL, 1mfd, 50V, M
C211	22488339	EL, 3.3mfd, 50V, M
C212	22321057	PP, 1000pF, 50V, J
C213	22488108	EL, 0.1mfd, 50V, M
C214	22362331	CD, 330pF, 50V, K
C216	22488479	EL, 4.7mfd, 50V, M
C217	22342223	CD, 0.022mfd, 50V, Z
C218	22488229	EL, 2.2mfd, 50V, M
C219	22342223	CD, 0.022mfd, 50V, Z
C220	22488229	EL, 2.2mfd, 50V, M
C501	22488478	EL, 0.47mfd, 50V, M
C701	22488109	EL, 1mfd, 50V, M
C702	22488109	EL, 1mfd, 50V, M
C703	22342223	CD, 0.022mfd, 50V, Z
C704	22485220	EL, 22mfd, 16V, M
C901, 902	22342223	CD, 0.022mfd, 50V, Z
C903	22487102	EL, 1000mfd, 35V, M
C904	22486471	EL, 470mfd, 25V, M
C905	22486471	EL, 470mfd, 25V, M

	RESISTORS	
	All resistors are carbon film 1/4W, ±5% unless otherwise noted.	
R001	22555221	220 ohm
R002	22555223	22K ohm
R003	22555472	4.7K ohm
R004	22555222	2.2K ohm
R005	22555101	100 ohm
R006	22555103	10K ohm
R007	22555222	2.2K ohm
R008	22555682	6.8K ohm
R009	22545272	2.7K ohm
R101	22555561	560 ohm
R102	22555101	100 ohm
R103	22555103	10K ohm
R104	22555273	27K ohm

Symbol No.	Part No.	Description
R105	22555271	270 ohm
R106	22545331	330 ohm
R107	22555273	27K ohm
R108	22555123	12K ohm
R109	22555104	100K ohm
R110	22555104	100K ohm
R111	22555331	330 ohm
R112	22555222	2.2K ohm
R113	22555153	15K ohm
R114	22555102	1K ohm
R115	22545123	12K ohm
R117	22658560	47K ohm, Semi-fixed
R118	22658394	100K ohm, Semi-fixed
R120	22555471	470K ohm
R131	22555101	100 ohm
R132	22555152	1.5K ohm
R133	22555102	1K ohm
R134	22545331	330 ohm
R135	22555103	10K ohm
R136	22545103	10K ohm
R137	22555332	3.3K ohm
R138	22555472	4.7K ohm
R139	22570262	100 ohm, 1W, Metal Oxied Film
R140	22555101	100 ohm
R141	22555103	10K ohm
R201	22570258	47 ohm, 1W, Metal Oxied Film
R202	22555183	18K ohm
R203	22555183	18K ohm
R204	22555392	3.9K ohm
R205	22555392	3.9K ohm
R206	22658421	1M ohm, Semi-fixed
R207	22555473	47K ohm
R208	22555473	47K ohm
R209, 210	22555222	2.2K ohm

Symbol No.	Part No.	Description
R211, 212	22555332	3.3K ohm
R213, 214	22555332	3.3K ohm
R215	22555102	1K ohm
R216	22555562	5.6K ohm
R217	22658558	4.7K ohm, Semi-fixed
R218	22555103	10K ohm
R219	22555333	33K ohm
R220	22545122	1.2K ohm
R221	22545154	150K ohm
R222	22555222	2.2K ohm
R501	22555223	22K ohm
R502	22555682	6.8K ohm
R503	22555473	47K ohm
R504	22555154	150K ohm
R701	22545333	33K ohm
R702	22545103	6.8K ohm
R703	22555823	82K ohm
R704, 705	22545222	2.2K ohm
R706, 707	22545222	2.2K ohm
R708	22545222	2.2K ohm
R709	22545103	10K ohm
R901	22555272	2.7K ohm
R903	22555104	100K ohm
R904	22570266	220 ohm, 1W, Metal Oxied Film

ACCESSORIES

AC01	22124701	Feeder Antenna
AC02	22902990	Owner's Manual